

# weillcornellmedicine

THE MAGAZINE OF  
WEILL CORNELL  
MEDICAL COLLEGE AND  
WEILL CORNELL  
GRADUATE SCHOOL OF  
MEDICAL SCIENCES

SPECIAL ISSUE 2011

## Building for the Future

The transformative  
leadership of  
Dean Antonio Gotto



## A Leg Up

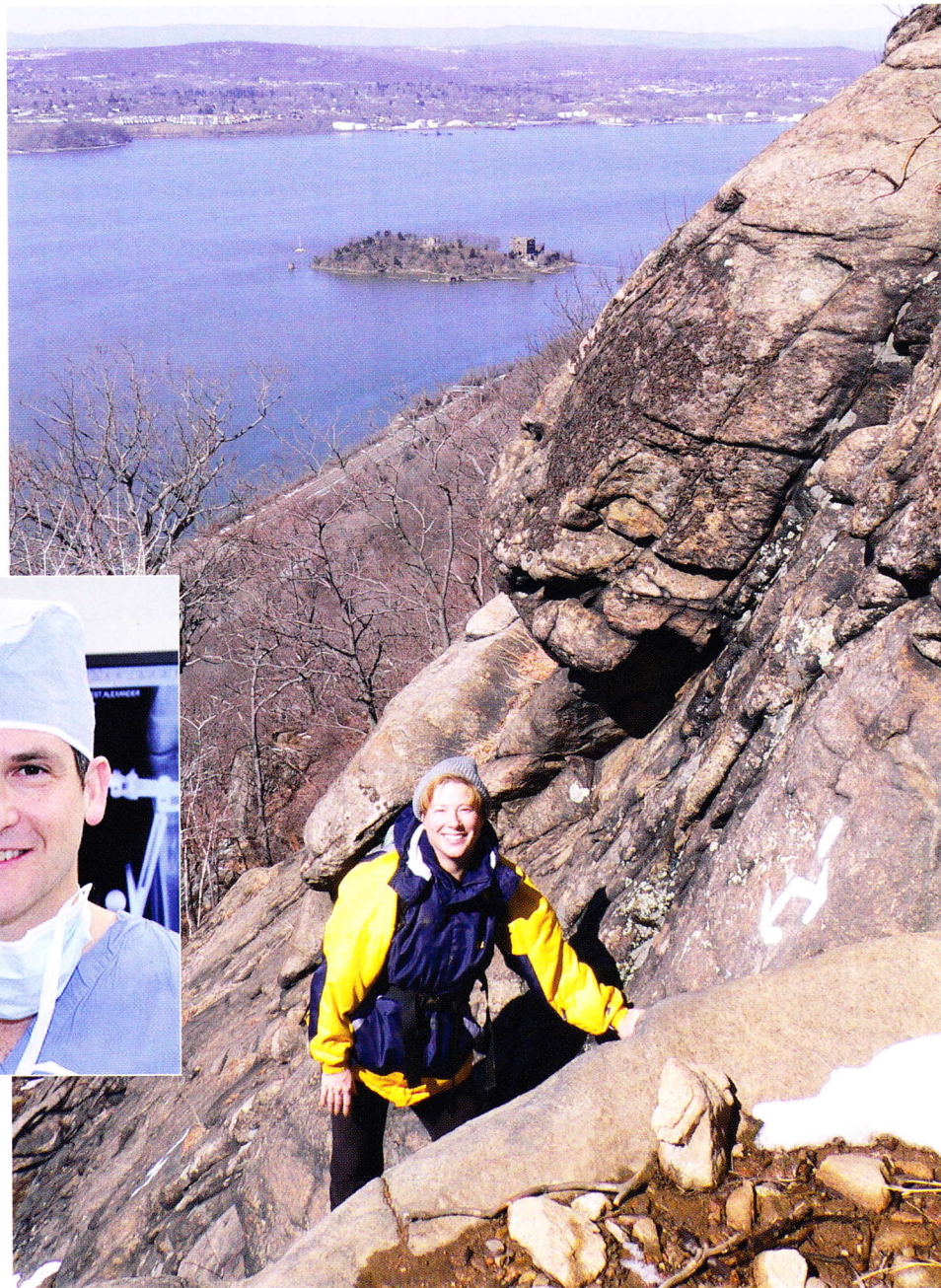
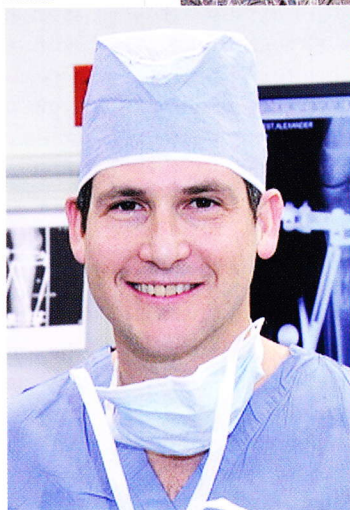
Orthopaedic surgeon S. Robert Rozbruch, MD '90, is a leader in a burgeoning field devoted to lengthening stunted limbs and repairing old injuries

**N**ancy Napurski was twenty-five and on a climbing date in the Connecticut Traprocks when the accident happened. Though a novice, she was leading the climb; during the hardest part of the ascent, she somehow lost her grip. "I learned much later that when you fall, you're supposed to be like Spider-Man and hang onto the cliff as tight as you can, but I jumped away from it," recalls Napurski, now fifty. "I swung back, and the impact was taken by my left ankle. It dislocated and I was hanging by my rope, terrified and screaming."

Luckily, two teenagers were being trained in mountain rescue nearby; their instructor came to Napurski's aid and supervised her removal via litter, since there was nowhere to land a helicopter. She was eventually moved to a hospital in Westchester, where she had surgery. "The next morning, my surgeon said I had a 50 percent chance of walking normally," she says. "At the time I was playing competitive volleyball, I had been a gymnast, I skied. I was so active, and the news was frightening."

Napurski eventually resumed normal walking. But over the next two decades she developed painful bone spurs and other complications—including an equinus deformity that required walking on the ball of her foot. Ankle surgery didn't solve her problems; she was forced to wear either an orthotic insert or high heels. She made the best of it by throwing herself into competitive swing dancing. She earned a bachelor's degree, began a career in public relations, and eventually moved to Upstate New York to be with her fiancé. By her late forties, she

PROVIDED



PROVIDED BY NANCY NAPURSKI

Climb every mountain: Nancy Napurski climbs Breakneck Ridge in the Hudson Valley after her ankle was repaired by surgeon S. Robert Rozbruch, MD '90 (left).



HOSPITAL FOR SPECIAL SURGERY

Attitude adjustment: Napurski's artist husband decorated her fixator so strangers would be less frightened of the device.

was facing the daunting prospect of having the joint fused when she heard about a program at Hospital for Special Surgery that might offer hope.

Enter S. Robert Rozbruch, MD '90, an associate professor of clinical orthopaedic surgery at Weill Cornell. Rozbruch is a pioneer in the nascent specialty of limb lengthening and complex reconstruction. Based on techniques developed in Russia after World War II, the field aims to correct the lingering effects of orthopaedic trauma, from shortened limbs due to childhood growth-plate injury to the complications of poorly healed fractures or postsurgical infection. Using external fixators—scaffolds that surround the limb and require tiny daily adjustments to pins inserted through the skin—Rozbruch and his colleagues are able to replace bone, add inches to arms and legs, and restore function almost to pre-injury levels. "This is life-changing for people—that's part of what's so exciting for me," says Rozbruch, president-elect of the hundred-member Limb Lengthening and Reconstruction Society. "You see an adult

who had had a fracture as a child; they're walking around with a leg that's crooked and short, and they've been told by doctors over the years that there's nothing that can be done, they just have to live with it. And then they find out that it can be repaired; we can straighten the leg, lengthen it, and make it normal. The emotion that people display is fabulous."

The field's progenitor was Gavriil Ilizarov, MD, an orthopaedic surgeon in the Siberian city of Kurgan who developed fixators—which the patients could adjust themselves—to treat poorly healed war wounds, using the basic physiological principle that compression facilitates bone healing. "The story goes that he went away for two weeks and left instructions on how to adjust the frame, but the patient turned it the wrong way," explains Rozbruch. "When he came back two weeks later and took an X-ray, he found the bone was pulled apart—was 'distracted'—yet there was new bone growing in the gap. That was the beginning of the thought that you could regenerate bone with distraction—and that led to the whole idea of limb lengthening."

During the Cold War, Ilizarov's technique didn't get much exposure in the West; it made its way to Italy in the Eighties, and the first such procedure was performed in the U.S. in 1988. Rozbruch became interested in the field after completing his orthopaedic training in the mid-Nineties; he took a sabbatical from HSS in 1999 to study the technique at the only facility, at the time, with a dedicated limb lengthening service: Sinai Hospital in Baltimore. HSS launched its own program in 2000; it became a dedicated service in 2005, with Rozbruch as chief. In addition to post-trauma repair, he and his team treat patients with conditions such as dwarfism and children with limb discrepancies and deformities related to birth defects and trauma. They also conduct research on a variety of topics, including the development of internal fixators and the basic sci-

ence of bone healing. "We're a dynamic group," he says "We're asking questions and doing research. We're training fellows, med students, and residents. It's an exciting field and this is an exciting time."

Napurski had her surgery in July 2009—timing it, in part, so she could avoid the slippery sidewalks of a Rochester winter while sporting the fixator. During the procedure, Rozbruch used a technique called ankle distraction, separating the joint and injecting stem cells taken from her hip to promote re-growth of cartilage. "The day after, the pain was terrible," she recalls. "I had a morphine drip, and it was appropriate. When I had to unlock the fixator and move my joints, I made sure that I was on codeine, but otherwise I was able to manage my pain with Tylenol. Some days were better than others."

She wore the fixator for twelve weeks, cleaning the pin sites and making adjustments several times daily. "One interesting thing I found is that the fixator scared people," she recalls. "It's not that scary when you have it on. But when strangers saw it, it made them afraid." Her husband is an artist, and he decorated the fixator with whimsical trappings like colorful pipe-cleaners and a clown head. "Suddenly people were attracted to it—they would smile at it and compliment me on my mobile sculpture," she says. "It was a completely different experience."

For Napurski, the procedure was a resounding success. As Rozbruch promised, she was "shoe to shoe" in nine months—walking in normal footwear by the following March. While she occasionally gets stiff if she's been on her feet all day, it's nothing that can't be handled with ibuprofen. "I've had such a miraculous recovery," says Napurski, whose testimonial is one of many on the service's website. "I can stand flat-footed—I hadn't been able to do that for twenty years. I can balance on one foot at a time. I can walk in heels, flip-flops, and sneakers without any problem. When people see my story online, they often ask, 'Is it really painful to have the fixator on?' I tell them, 'It's not any more painful than when you broke your leg in the first place.'"

— Beth Saulnier